



كلية طب وايل كورنيل في قطر

Weill Cornell Medical College in Qatar

Member of Qatar Foundation

## Press Release

### Weill Cornell researchers develop new kidney transplant rejection test

**Doha – July 6, 2015:** Researchers at Weill Cornell Medical College in Qatar and New York have discovered a new test to detect whether a patients' immune system is rejecting a transplanted kidney.

The new test, if fully developed, could one day help doctors determine whether a patient is rejecting their new kidney far earlier than the test currently used in hospitals.

Another advantage is that the newly discovered method uses urine analysis, while the current test involves taking biopsy material directly from the implanted kidney using a syringe, which can cause discomfort and bleeding.

The test is described in a research paper published in the prestigious *Journal of the American Society of Nephrology* and was conducted by a team of WCMC-Q researchers led by Dr. Karsten Suhre, Professor of Physiology and Biophysics, in partnership with colleagues at Weill Cornell Medical College in New York, led by Dr. Manikkam Suthanthiran, Stanton Griffis Distinguished Professor of Medicine.

Dr. Suhre said: "We are very excited about this discovery because it has the potential to lead to a new test that could be both more effective and less invasive for the patient, though we are at a very early stage at the moment. It is always very exciting to make a discovery that has the potential to lead to a real clinical application that will make healthcare better for patients."

Organ transplants are perceived as foreign bodies by the organ recipient's immune system, which will then try to destroy it. This can be controlled with immunosuppressant drugs but they must be administered carefully because they make patients more susceptible to infections and malignancy. Moreover, transplant recipients can experience rejection despite the immunosuppressive drugs.

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**Communications  
Division  
WCMC-Q  
Education City  
P.O. Box 24144  
Doha, Qatar**

**Nesreen Al-Refai**  
Chief Communications Officer  
Phone: +974 4492 8650  
Fax: +974 4492 8444  
nma2005@qata-  
rmed.cornell.edu

**John Hayward**  
Senior Writer  
Phone: +974 4492 8658  
joa2036@qatar-  
med.cornell.edu



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The new test works by analyzing the urine for metabolites, which are substances produced by biochemical processes in the body. Some metabolites are only produced under certain conditions and can thereby be used as markers for disease. Dr. Suhre's team analyzed a total of 1,516 samples from 241 kidney transplant recipients and found that they could identify a particular set of metabolites that indicated the implanted organ was being rejected.

Dr. Suhre said: "We compared our results against the results of traditional biopsy tests and we found that our test could predict rejection of the kidney very reliably, with a level of accuracy around 80 percent at this early stage. A great aspect of this research is that here in Qatar we have the state-of-the-art equipment, high-tech computing power and the expertise to carry out very detailed sample analysis, which complements the research of our colleagues in New York and allows us to conduct research together in a very synergistic way."

Importantly, the new test can be carried out in approximately 24 hours, whereas the biopsy results can take longer. A further advantage is that the new test is able to determine the health of the entire kidney, while a biopsy might take material from a healthy part of the kidney and will therefore fail to discover that other parts of the organ are deteriorating. Very importantly, the invasive biopsy procedure can lead bleeding, graft loss and even death, albeit very infrequently.

Dr. Suthanthiran, a recognized authority on kidney transplantation, said: "We have long standing interest in developing noninvasive tests to determine the health of a kidney transplant. We previously discovered a gene-based test using urine samples; the new test, developed in collaboration with Dr. Suhre, is a metabolite-based test. Very interestingly, the combination of gene-based test and metabolite-based test predicted acute rejection with a 90 percent accuracy.

"When fully developed, this new test has the potential to help us manage transplanted kidneys more effectively and to significantly reduce the number of biopsies performed to diagnose rejection. Moreover, we may be able to anticipate a future episode of rejection and initiate

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Chief Communications Officer  
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preemptive therapy and avoid damage to the kidney transplant altogether. That would be a great advance for both physicians and patients and we are looking forward to conducting more research in this area to bring the test from the laboratory to the hospital.”

The study was aided by funding from the Biomedical Research Program (BMRP) program of Qatar Foundation, which supports the research effort at WCMC-Q.

Dr. Khaled Machaca, Associate Dean for Research at WCMC-Q, said: “These findings are very promising and also extremely relevant to Qatar and the surrounding region because of the prevalence of diabetes and the associated risk of kidney failure.

“This is also a great example of the benefits of cooperation between Weill Cornell researchers in Qatar and New York. Working together, they are able to make important discoveries that have the potential to deliver better healthcare outcomes to people in Qatar and all over the world.”

The study, entitled Urine Metabolite Profiles Predictive of Human Kidney Allograft Status, can be read in full at

<http://jasn.asnjournals.org/content/early/2015/06/05/ASN.2015010107.abstract>

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### Photo Caption:

Dr. Karsten Suhre, Professor of Physiology and Biophysics at WCMC-Q

### About Weill Cornell Medical College in Qatar

Weill Cornell Medical College in Qatar is a partnership between Cornell University and Qatar Foundation. It offers pre-medical and medical courses leading to the Cornell University M.D. degree with teaching by Cornell and Weill Cornell faculty and by physicians at Hamad Medical Corporation (HMC) and Aspetar Orthopedic and Sports Medicine Hospital who hold Weill Cornell appointments.

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Through its biomedical research program, WCMC-Q is building a sustainable research community in Qatar while advancing basic science and clinical research. Through its medical college, WCMC-Q seeks to provide the finest education possible for medical students, to improve health care both now and for future generations, and to provide high quality health care to the Qatari population.

For more info, please contact:

Hanan Lakkis  
Media Relations Manager  
Weill Cornell Medical College in Qatar  
Mobile: +974 55536564  
Direct Line: +974 44928661  
[hyl2004@qatar-med.cornell.edu](mailto:hyl2004@qatar-med.cornell.edu)

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[nma2005@qatar-med.cornell.edu](mailto:nma2005@qatar-med.cornell.edu)

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Senior Writer  
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